

We claim:

1. A method for manufacturing a light guide plate, comprising:
providing a mold;
melting resin material and mixing an inert gas into the molten resin material;
injecting mixture of the molten resin material and the inert gas into a cavity of the mold ;
cooling the mold under a constant pressure; and
demolding and taking the light guide plate out from the mold.
2. The method for manufacturing a light guide plate as recited in claim 1, wherein the inert gas is argon (Ar), helium (He), or neon (Ne).
3. The method for manufacturing a light guide plate as recited in claim 1, further comprising the step of heating the inert gas before mixing it into the molten resin material.
4. The method for manufacturing a light guide plate as recited in claim 3, wherein the inert gas is heated to a temperature in the range from 100~120°C.
5. The method for manufacturing a light guide plate as recited in claim 4, wherein the inert gas is heated to a temperature of 110°C.
6. The method for manufacturing a light guide plate as recited in claim 1, wherein when the mixture of the molten resin material and the inert gas is injected into the cavity, a viscosity of the molten resin material is in the range from 50~5000 Pa.sec.

7. The method for manufacturing a light guide plate as recited in claim 6, wherein said viscosity of the molten resin is in the range from 200~1000 Pa.sec.
8. The method for manufacturing a light guide plate as recited in claim 1 wherein the mold is made of a metal having a high coefficient of heat transfer.
9. The method for manufacturing a light guide plate as recited in claim 8, wherein the mold is made of copper, a copper alloy, or beryllium copper.
10. The method for manufacturing a light guide plate as recited in claim 1, wherein the mold is made of nickel, a nickel-cobalt alloy, silicon carbide, chrome, or titanium carbide.
11. The method for manufacturing a light guide plate as recited in claim 1, wherein the resin material is methacrylate resin.
12. The method for manufacturing a light guide plate as recited in claim 11, wherein a melting temperature of the molten methacrylate resin is in the range from 170~300°C.
13. The method for manufacturing a light guide plate as recited in claim 12, wherein said temperature is in the range from 230~260°C.
14. A method of making an optical element via injection molding, comprising steps of:
 - injecting melted resin material mixed up with at least one inert gas into a mold;
 - cooling the mold; and

obtaining a molded optical element essentially made of resin with at least one inert gas involved therewith, wherein said molded optical element has a smaller density than those made of resin via injection molding without any inert gas involved therewith.

15. The method as described in claim 14, wherein a viscosity of said melted resin material is reduced via said at least one inert gas during molding.